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EXAMINER	
TIMBLIN, ROBERT M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/776,004	Applicant(s) YACH ET AL.	
	Examiner ROBERT TIMBLIN	Art Unit 2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-9,12-15 and 18-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-9,12-15 and 18-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action corresponds to application 10/776,004 filed 2/10/2004.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/21/2010 has been entered.

Response to Amendment

Claims 1, 2, 5, 6, 7, 8, 9, 12, 13, 15, 18, and 19 have been amended. Claims 4, 10, and 11 have been cancelled while claims 21-25 have been added. Accordingly, claims 1, 2, 5-9, 12-15, and 18-25 are pending prosecution.

Claim Remarks

Examiner observes the use of the phrase “adapted to” (i.e. a “receive/transmit circuitry adapted to”) as found in claims 12 and 23. MPEP 2106 II C (B) recites:

> *“Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation.” The following are examples of language that may raise a question as to the limiting effect of the language in a claim: (B) “adapted to” or “adapted for” clauses*

Accordingly, the noted claims include language that suggests or makes optional recited steps to be performed. It is recommended that positive language of the receive/transmit circuitry (e.g. "configured to") positively performing the recited steps so to clarify the limiting effect of the language in the claim(s) be recited.

Claim Objections

Claims 1, 15, and 23 are objected to because they include claim limitations that may be interpreted to render the claims indefinite.

Specifically, claim 1 recites in step i) "whereby an out of match condition between the mobile-copy database values and the network-copy database values may be determined…" Therein, the use of "whereby" and further the phrase "may be" render the claims indefinite because it is unclear whether the limitations following these phrases are part of the claimed invention (see also MPEP 2106 II C (D). Claim 1 includes several occurrences of a "whereby" clause (e.g. step ii and iii)) and thus is objected to for the same reasons.

Claims 15 and 23 recite similar features and are objected for the same rationale. Clarification is respectfully requested.

Claim 6 is objected to because "said key field second hash" lacks antecedent basis.

Claim 8 is objected to because step iv) recites "receive values of hashes generated by the network part". Therein, is unclear which hashes are received (e.g. first or second hashes or both).

Clarification of the above is respectfully requested.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 8, 9, 12, 13, 15, 18, 21-23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Livschitz (U.S. Patent 6,470,329) in view of Gilfix et al. ('Gilfix' hereafter, U.S. Patent 7,133,963)

With respect to claim 1, Livschitz teaches A mobile node (col. 9 line 49; PDA device) of a radio communication system (fig. 9 and col. 9 line 49-50) having a network part (col. 9 line 50; PDA server) and the mobile node (col. 9 line 49; PDA device), the network part having a network-copy of a database containing database records and database values of the database (col. 5 line 56-57) and the mobile node (col. 9 line 49; PDA device) having a mobile-copy of the database (fig. 2, M1) containing database records and database values of the database (col. 5 line 56-57), the database records and database values of the database of the network-copy (Figs 1-9; e.g. M2) and the mobile-copy of the database, respectively, correspond to each other when the network-copy and the mobile-copy of the database are in match with one another (col. 2 lines 38-40; e.g. when the databases are in synchronization, they are in match with one another), said mobile node comprising:

processing circuitry (80) coupled to the mobile-copy database (86), said processing circuitry configured to:

i) generate a first hash (Fig. 1, 8; e.g. a first hash in a recursive hashing process) and communicate said first hash to the network part on a communications channel of the radio communication system, whereby an out of match condition between the mobile-copy database values and the network-copy database values may be determined (fig. 1 wherein the hash signature is communicated over line 6 to determine if a match is present),

ii) generate, upon a determination of an out of match condition between mobile-copy database values and network-copy database values (col. 8 lines 14-15; e.g. "If the signature g(hA) is not identical to g(hB)"), a second hash (figs. 2, 3 and col. 6 lines 18-25; e.g. the databases are recursively hashed in a sequence of steps to teach at least a first and second hash) pursuant to a second hash technique (col. 5 line 30; e.g. one-way hash function) of a second computational intensity (col. 5 line 33-35) and based upon the database records in the mobile-copy database (col. 5 line 34; e.g. signature of a data set), and communicate said second hash to the network part on said communications channel (col. 6 line 59-60 and Figs 1 and 2 drawing references 6 and 18 wherein the signatures are disclosed as transferred), and requires a greater amount of communication channel capacity to communicate said second hash (col. 7 lines 56-61) than said first hash ("first hash", as taught by Gilfix below), whereby an out of match condition between a record of the mobile-copy database records and a corresponding record of the network-copy database records may be determined (col. 6 lines 32-35; e.g. differences in the data blocks are determined),

iii) retrieve the out of match database record (col. 10 lines 15-21) from the mobile-copy database upon a determination of an out of match condition between said mobile-copy database record and said corresponding network-copy database record for communication to the network part (col. 7 lines 10-14; e.g. "after the recursive process all remaining elementary data blocks of the data set A are transferred and copied"), whereby to match the network-copy database records and the mobile-copy database records are matched to each other (col. 7 line 31; e.g. the data sets A and B are synchronized);

wherein the radio communication system provides bi-directional (col. 9 lines 49-60 wherein the PDA device is synchronized to the server; therein data synchronized between the PDA server and PDA device describes bi-directional data communications) data communications services to said mobile node part (fig. 9, reference 84), and wherein data is communicated from the mobile node to the network by an up-link (col. 9 lines 60-61; e.g. the PDA device uses a wireless connectivity to upload the schedule; therein, uploading is interpreted as using an up-link) and, data is communicated from the network part to the mobile node by a down-link (col. 1 lines 34-35; e.g. data is transferred between an original data set and remote copy and col. 10 lines 15-18; e.g. the PDA server returns a 365-bit mask to the PDA device).

Although Livschitz teaches generating a first hash (e.g. Fig. 1) and second hash (e.g. a one-way hash function is regenerated via recursive process), Livschitz does not appear to expressly describe i) generating the first hash pursuant to a first hash technique of a first computational intensity and based on values, and in which said second computational intensity is greater than said first computational intensity.

Gilfix, however, teaches i) generating a first hash pursuant to a first hash technique of a first computational intensity (col. 2 lines 19-24) and based on values (col. 7 lines 48-49 wherein the checksum is calculated by a sum of the values of the bits in a memory block), and in which said second computational intensity is greater than said first computational intensity (col. 8 lines 23-26 wherein weak checksums include small computational overhead) for providing first and second hash techniques to determine probable matches.

Accordingly, in the same field of endeavor (i.e. hash functions), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the hashing techniques as provided by Gilfix would have given Livschitz the ability to use a first hash technique with small computational overhead to compute differences upfront (e.g. needed by Livschitz, col. 7 line 67). Further, with Livschitz (who is capable of calculating different hashing techniques – see Fig. 8) using the weak checksum (as provided by Gilfix) upfront, a system using a second hash technique when a stronger calculation is needed (see Gilfix, col. 8 line 26) would have been provided for the benefit of saving computational costs.

With respect to claim 2, Livschitz teaches the apparatus of claim 1 wherein said processing circuitry generates said first hash responsive to an external triggering event, occurrence of which is detectable at the mobile node (col. 9 line 50-56).

With respect to claim 8, Livschitz teaches the apparatus of claim 1 wherein the processing circuitry is additionally configured to:

iv) receive values of hashes (signatures h(A) and h(B)) generated by the a network part and determine whether the values of hashes formed at the network part, correspond with locally-generated values at the mobile node (Figs. 1-4);

and

v) receive indications of database mismatches, said processing circuitry thereafter requesting additional information associated with the mobile-copy of the database (col. 6 line 67; e.g. the recursive process requests additional information until complete).

With respect to claim 9, Livschitz teaches the apparatus of claim 8 wherein hashes generated by a network part processing circuitry include a first hash (Fig. 1) and based upon the database values of the network-copy database (Fig. 1 data sets A and B), and a second hash (fig. 2, 3 and col. 6 lines 18-25; e.g. the databases are recursively hashed in a sequence of steps to teach at least a first and second hash) pursuant to a second hash technique (col. 5 line 30; e.g. one-way hash function) of a second computational intensity (col. 5 line 33-35) and based upon the database records in the network-copy database (Fig. 1 data sets A and B).

Livschitz does not appear to teach the first hash is pursuant to a first hash technique of a first computational intensity.

Gilfix, however teaches the first hash is pursuant to a first hash technique of a first computational intensity (col. 2 lines 20-25) for computing a weak checksum.

Accordingly, in the same field of endeavor (i.e. hash functions), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the hashing techniques as provided by

Gilfix would have given Livschitz the ability to use a first hash technique with small computational overhead to compute differences upfront (e.g. needed by Livschitz, col. 7 line 67). Further, with Livschitz (who is capable of using different hashing techniques – see Fig. 8) using the weak checksum (as provided by Gilfix) upfront, a system using a second hash technique when a stronger calculation is needed (see Gilfix, col. 8 line 26) would have been provided for the benefit of saving computational costs.

With respect to claim 12, Livschitz teaches the apparatus of claim 8 further comprising circuitry adapted to receive out of match the values of the at least the portions of the data records responsive a comparison of a second hash of said the values with corresponding values network-copy database records with a second hash of said mobile-copy database records (fig. 3 and col. 7 lines 45-48).

With respect to claim 13, Livschitz teaches the apparatus of claim 12 further comprising database updater circuitry (col. 10, line 20), configured to alter at least one record of a selected one of the mobile- copy database and the network-copy database (col. 10, line 20; e.g. updating is seen as altering).

With respect to claim 15, Livschitz teaches A method of communicating in a radio communication system (fig. 9 and col. 9 line 49-50) having a network part that maintains at least a network-copy of a database containing database records and database values of the database (col. 5 line 56-57) and a mobile node (col. 9 line 49; PDA device) that maintains a mobile-copy

(fig. 2, M1) of the database containing database records and database values of the database the database records and database values of the database of the network-copy (Figs 1-9; e.g. M2)and the mobile-copy of the database, respectively, correspond when the network-copy database and the mobile-copy database are in match with one another (col. 2 lines 38-40; e.g. when the databases are in synchronization, they are in match with one another), the method altering at least one database record the data of at least one of the network-copy database and the mobile-copy database to place the network-copy and the mobile-copy in match with each other (col. 10 lines 15-21), the method comprising:

generating at the mobile (80) node a first hash (Fig. 1, 8; e.g. a first hash in a recursive hashing process) pursuant to a first hash technique of a first computational intensity and based upon the database values of the mobile-copy database (Fig. 1, data sets A and B), when the network-copy database and the mobile-copy database are suspected of being out of synchronization with each other (col. 6 line 41-49 col. 9 line 52-56);

sending said first hash value from the mobile node to the network part on a communications channel of the radio communication system (Fig. 1 line 6), whereby an out of match condition between the mobile-copy database values and the network-copy database values may be determined (fig. 1 wherein the hash signature is communicated over line 6 to determine if a match is present);

receiving, at the mobile node M1), indication of results of a comparison (figs. 1-3; e.g. if the results indicate non-identical portions, mobile node M1 performs the hashing function again; therein the mobile node needs an indication of comparison in order to hash again) at the network

part (M2), of said first hash value sent during said operation of sending, to a corresponding network-copy of said first hash value (fig. 1, reference 6); and

when said indication of results of the comparison of said first hash value generated at the mobile node to a corresponding network-copy of said first hash value indicates that the mobile-copy database and the network copy database are out of match (col. 6 line 32-58; e.g. the process if the portions are not identical, or, out of match), thereafter generating a second hash at the mobile node (fig. 2, 3 and col. 6 lines 18-25; e.g. the databases are recursively hashed in a sequence of steps to teach at least a first and second hash) pursuant to a second hash technique (col. 5 line 30; e.g. one-way hash function) of a second computational intensity (col. 5 line 33-35) and based upon the database records in the mobile-copy database (col. 5 line 34; e.g. signature of a data set), and requires a greater amount of communication channel capacity to communicate said second hash (col. 7 lines 56-61) than said first hash ("first hash", as taught by Gilfix below); and

sending said second hash value from the mobile node to the network part on said communications channel for comparison to a corresponding network-copy of the second hash value (col. 6 line 59-60 and Figs 1 and 2 drawing references 6 and 18 wherein the signatures are disclosed as transferred), whereby an out of match condition between a record of the mobile-copy database records and a corresponding record of the network-copy database records may be determined (fig. 1 wherein the hash signature is communicated over line 6 to determine if a match is present);

wherein the radio communication system provides bi-directional (col. 9 lines 49-60 wherein the PDA device is synchronized to the server; therein data synchronized between the

PDA server and PDA device describes bi-directional data communications) data communications services to said mobile node part (fig. 9, reference 84), and wherein data is communicated from the mobile node to the network by an up-link (col. 9 lines 60-61; e.g. the PDA device uses a wireless connectivity to upload the schedule; therein, uploading is interpreted as using an up-link) and, data is communicated from the network part to the mobile node by a down-link (col. 1 lines 34-35; e.g. data is transferred between an original data set and remote copy and col. 10 lines 15-18; e.g. the PDA server returns a 365-bit mask to the PDA device).

Although Livschitz teaches generating a first hash (e.g. Fig. 1) and second hash (e.g. a one-way hash function is regenerated via recursive process), Livschitz does not appear to expressly describe i) generating the first hash pursuant to a first hash technique of a first computational intensity and based on values, and in which said second computational intensity is greater than said first computational intensity.

Gilfix, however, teaches i) generating a first hash pursuant to a first hash technique of a first computational intensity (col. 2 lines 19-24) and based on values (col. 7 lines 48-49 wherein the checksum is calculated by a sum of the values of the bits in a memory block), and in which said second computational intensity is greater than said first computational intensity (col. 8 lines 23-26 wherein weak checksums include small computational overhead) for providing first and second hash techniques to determine probable matches.

Accordingly, in the same field of endeavor (i.e. hash functions), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the hashing techniques as provided by Gilfix would have given Livschitz the ability to use a first hash technique with small

computational overhead to compute differences upfront (e.g. needed by Livschitz, col. 7 line 67). Further, with Livschitz (who is capable of using different hashing techniques – see Fig. 8) using the weak checksum (as provided by Gilfix) upfront, a system using a second hash technique when a stronger calculation is needed (see Gilfix, col. 8 line 26) would have been provided for the benefit of saving computational costs.

With respect to claim 18, Livschitz teaches the method of claim 15 further comprising the operations of delivering of the mobile-copy database records to the network part, comparing said delivered records with corresponding records of the network-copy database records of the at least the first database, and causing overwriting of at least portions of a selected one of the network-copy database records and the mobile-copy database records responsive to a determination of an out of match condition between a record of the mobile-copy database records and a corresponding record of the network-copy database records comparisons made during said operation of comparing the portions of the mobile copy (col. 10 lines 18-21).

With respect to claim 21, Gilfix in combination with Livschitz further teaches the apparatus of claim 1 wherein said first hash technique comprises a checksum process (col. 2 line 22) for providing a checksum.

Accordingly, in the same field of endeavor (i.e. hash functions), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the hashing techniques as provided by Gilfix would have given Livschitz the ability to use a first hash technique with small

computational overhead to compute differences upfront (e.g. needed by Livschitz, col. 7 line 67). Further, with Livschitz (who is capable of using different hashing techniques – see Fig. 8) using the weak checksum (as provided by Gilfix) upfront, a system using a second hash technique when a stronger calculation is needed (see Gilfix, col. 8 line 26) would have been provided for the benefit of saving computational costs.

With respect to claim 22, Livschitz does not teach a checksum process. Gilfix in combination with Livschitz further teaches the method of claim 15 wherein said generating a first hash further comprises generating a first hash pursuant to a checksum process (col. 2 line 22) for providing a checksum.

Accordingly, in the same field of endeavor (i.e. hash functions), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the hashing techniques as provided by Gilfix would have given Livschitz the ability to use a first hash technique with small computational overhead to compute differences upfront (e.g. needed by Livschitz, col. 7 line 67). Further, with Livschitz (who is capable of using different hashing techniques – see Fig. 8) using the weak checksum (as provided by Gilfix) upfront, a system using a second hash technique when a stronger calculation is needed (see Gilfix, col. 8 line 26) would have been provided for the benefit of saving computational costs.

With respect to claim 23, Livschitz teaches A mobile node (col. 9 line 49; PDA device) of a radio communication system (fig. 9 and col. 9 line 49-50) having a network part (col. 9 line

50; PDA server) and the mobile node (col. 9 line 49; PDA device), the network part having a network-copy of a database containing database records and database values of the database (col. 5 line 56-57) and the mobile node (col. 9 line 49; PDA device) having a mobile-copy of the database (fig. 2, M1) containing database records and database values of the database (col. 5 line 56-57), the database records and database values of the database of the network-copy (Figs 1-9; e.g. M2) and the mobile-copy of the database, respectively, correspond to each other when the network-copy and the mobile-copy of the database are in match with one another (col. 2 lines 38-40; e.g. when the databases are in synchronization, they are in match with one another), said mobile node comprising:

receive circuitry (col. 20, receiver) adapted to receive signals transmitted by a network part transmitter (Fig. 1);

transmit circuitry (col. 5 line 22, sender) adapted to transmit signals to a network part on a communications channel (Fig. 1);

a memory element storing at least one mobile-copy database (86); and

processing circuitry coupled to said receive circuitry (80), said transmit circuitry, and said memory element, and including:

a request detector (col. 3 line 23),

a hash generator to generate (col. 3 line 23; e.g. an agent that computes a signature), in response to said request detector detecting an external triggering event (col. 9 line 50-56), a first hash (Fig. 1, 8; e.g. a first hash in a recursive hashing process) of the mobile-copy database (col. 5 line 26-27), said first hash being communicated to the network part via said transmit circuitry on said communications channel (Figs. 1, 2; drawing references 6, 18, 20), whereby an out of

match condition between the mobile-copy database values and the network-copy database values may be determined (col. 6 lines 32-35; e.g. differences in the data blocks are determined), and to generate, upon a determination of an out of match condition between mobile-copy database values and network-copy database values (col. 8 lines 14-15; e.g. "If the signature g(hA) is not identical to g(hB)") being received from the network part via said receive circuitry, a second hash (fig. 2, 3 and col. 6 lines 18-25; e.g. the databases are recursively hashed in a sequence of steps to teach at least a first and second hash) pursuant to a second hash technique (col. 5 line 30; e.g. one-way hash function) of a second computational intensity (col. 5 line 33-35) and based upon the database records in the mobile-copy database col. 5 line 34; e.g. signature of a data set), said second hash being communicated to the network part via said transmit circuitry on said communications channel (Figs. 1, 2; drawing references 6, 18, 20), and requires a greater amount of communication channel capacity (col. 7 lines 56-61) to communicate said second hash than said first hash ("first hash", as taught by Gilfix below), whereby an out of match condition between a record of the mobile-copy database records and a corresponding record of the network-copy database records may be determined (col. 6 lines 32-35; e.g. differences in the data blocks are determined), and

a content retriever (Fig. 4; e.g. receiving a copy) to retrieve the out of match database record from the mobile-copy database upon reception via said receive circuitry of a determination of an out of match condition between said mobile-copy database record and said corresponding network-copy database record for communication to the network part (Fig. 4 and col. 10 lines 19-21), whereby the network-copy database records and the mobile-copy database records are matched to each other (col. 7 line 31; e.g. the data sets A and B are synchronized).

Although Livschitz teaches generating a first hash (e.g. Fig. 1) and second hash (e.g. a one-way hash function is regenerated via recursive process), Livschitz does not appear to expressly describe i) generating the first hash pursuant to a first hash technique of a first computational intensity and based on values, and in which said second computational intensity is greater than said first computational intensity.

Gilfix, however, teaches i) generating a first hash pursuant to a first hash technique of a first computational intensity (col. 2 lines 19-24) and based on values (col. 7 lines 48-49 wherein the checksum is calculated by a sum of the values of the bits in a memory block), and in which said second computational intensity is greater than said first computational intensity (col. 8 lines 23-26 wherein weak checksums include small computational overhead) for providing first and second hash techniques to determine probable matches.

Accordingly, in the same field of endeavor (i.e. hash functions), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the hashing techniques as provided by Gilfix would have given Livschitz the ability to use a first hash technique with small computational overhead to compute differences upfront (e.g. needed by Livschitz, col. 7 line 67). Further, with Livschitz (who is capable of calculating different hashing techniques – see Fig. 8) using the weak checksum (as provided by Gilfix) upfront, a system using a second hash technique when a stronger calculation is needed (see Gilfix, col. 8 line 26) would have been provided for the benefit of saving computational costs.

With respect to claim 25, Livschitz teaches the mobile node of claim 23 wherein said transmit circuitry and said processing circuitry are adapted to deliver mobile-copy database records to the network part, responsive to a determination of an out of match condition between a record of the mobile-copy database records and a corresponding record of the network-copy database records (col. 10 lines 15-21).

Claims 5-7 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Livschitz and Gilfix as applied to parent claims 1 and 23 above, and further in view of Nguyen (U.S. Patent 5,809,494).

With respect to claim 5, Livschitz and Gilfix teach a database with records (e.g. Livschitz col. 1 line 57-78and col. 5 lines 55-56 and Gilfix Fig. 1) and hashing contents but do not appear to expressly teach the apparatus of claim 1 wherein the database records maintained at the network-copy database and the mobile-copy database are comprised of a first key field and at least a first record field for each database record, and wherein said second hash comprises a hash of said first key field of each database record.

Nguyen, however, teaches the apparatus of claim 1 wherein the database records maintained at the network-copy database and the mobile-copy database are comprised of data including at least a first key field and at least a first record field for each database record, and wherein said second hash comprises a hash of said first key field of each database record (col. 1 lines 54-65) for teaching a hashing function that hashes key fields.

Accordingly, in the same field of endeavor, (i.e. hashing techniques), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the hash value as provided by Nguyen would have given Livschitz and Gilfix a hash of a key field of a record for the benefit of providing an identifying key on which to compare records. Thus a more efficient way of comparing records would have been achieved.

With respect to claim 6, the combination of Livschitz, Gilfix, and Nguyen teach the apparatus of claim 5 wherein the determination that the network-copy database and the mobile-copy database are out of match is made responsive to said key field second hash (Livschitz, col. 6 line 34).

With respect to claim 7, the combination of Livschitz, Gilfix, and Nguyen teach the apparatus of claim 5 wherein the out of match database record retrieved by said processing circuitry comprises both said key field and said record field (Livschitz, col. 7 line 46-48 wherein appropriate data blocks are replaced).

With respect to claim 24, Livschitz and Gilfix further teaches the mobile node of claim 23 wherein said first hash technique comprises a checksum process (Gilfix, col. 2 line 19-20). Livschitz and Gilfix do not appear to expressly teach wherein said second hash comprises a hash of a first key field of said database record.

Nguyen, however, teaches wherein said second hash comprises a hash of a first key field of said database record (col. 1 lines 54-65) for teaching a hashing function that hashes key fields.

Accordingly, in the same field of endeavor, (i.e. hashing techniques), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the hash value as provided by Nguyen would have given Livschitz and Gilfix a hash of a key field of a record for the benefit of providing an identifying key on which to compare records. Thus a more efficient way of comparing records would have been achieved.

Claims 14, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Livschitz and Gilfix as applied to claims 1 and 15 above, respectively, and further in view of Boothby (U.S. Patent 5,684,990).

With respect to claim 14, Livschitz and Gilfix do not expressly teach the apparatus of claim 13 wherein said database value updater operates pursuant to a selected conflict resolution protocol.

Boothby, however, teaches said database value updater operates pursuant to a selected conflict resolution protocol (col. 4 lines 39-49) for providing a conflict resolution strategy in a synchronization environment.

Accordingly, in the same field of endeavor, (i.e. synchronizing), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the conflict resolution strategies provided

by Boothby would have given Livschitz assurance of a consistent database should conflicts arise when a data record is updated (e.g. need disclosed by Livschitz, col. 5 lines 26-27). Further, Boothby would have provided user interaction over the synchronization process for the benefit of a user having control over the synchronization process. Thus, Boothby would have provided a method to give Livschitz consistent and coherent databases during synchronizations.

With respect to claim 19, Livschitz and Gilfix do not expressly teach the method of claim 18 wherein the selected one of the network-copy and the mobile-copy of which the portions thereof are caused to be overwritten is selected according to a conflict resolution scheme.

Boothby, however, teaches the selected one of the network-copy and the mobile-copy of which the portions thereof are caused to be overwritten is selected according to a conflict resolution scheme (col. 4 lines 39-49) for providing a conflict resolution strategy in a synchronization environment.

Accordingly, in the same field of endeavor, (i.e. synchronizing), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the conflict resolution strategies provided by Boothby would have given Livschitz assurance of a consistent database should conflicts arise when a data record is updated (e.g. need disclosed by Livschitz, col. 5 lines 26-27). Further, Boothby would have provided user interaction over the synchronization process for the benefit of a user having control over the synchronization process. Thus, Boothby would have provided a method to give Livschitz consistent and coherent databases during synchronizations.

Regarding claim 20, Livschitz and Gilfix do not expressly teach the operation of creating a change-history by indicating overwriting of the portions selectively caused during said operation of selectively causing.

Boothby, however, teaches the operation of creating a change-history by indicating overwriting of the portions selectively caused during said operation of selectively causing (col. 4 line 25; i.e. "synchronization depends on knowledge of (2) the history of updates in each database" and further col. 6 line 10-15; i.e. “for every desktop record, the synchronization program takes not of the record’s status, i.e., whether a corresponding status file record exists, and if so, whether that record has changed) for providing a history of changes that were caused.

In the same field of endeavor, (i.e. data synchronization), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because Boothby would have given Livschitz a history of changes to determine what changes have been made and to keep track of those changes. Ultimately, in the database art, this provision would have benefited Livschitz in a way for backup in case of possible failure or other data loss (as taught by Boothby in col. 3 line 65-67).

Response to Arguments

102(b) rejections by Livschitz

Applicant's arguments with respect to claims 1, 15, and 23 have been considered but are moot in view of the new grounds of rejection now relying upon Livschitz in view of Gilfix.

On page 12 of the remarks, Applicant asserts that the claimed invention requires that the first hash technique be of a first computation intensity and based upon database values of the

mobile-copy database and that the second hash technique of a second computational intensity and based upon the database records in the mobile-copy database.

Examiner submits that the combination of Livschitz and Gilfix teach the asserted aspect by at least teaching the computation of a checksum which is a sum of values of the bits in a memory block (as taught by Gilfix to disclose the first hash technique) while Livschitz teaches a one-way hash function (as a second hash technique) that computes a hash over database records. Further, Examiner notes that Gilfix teaches a one-way hash function (as used by Livschitz) is stronger (thus more computationally intensive) than a checksum (col. 8 lines 25-30). Thus, Examiner submits that Livschitz in view of Gilfix teach the claimed first and second hash techniques.

Applicant states on page 13 of the remarks that in Livschitz, there is no conditional requirement for taking of the second hash. Examiner respectfully disagrees and submits that Livschitz teaches a recursive process in which a second and subsequent hash may be generated. This recursive process continues while there is a determination that paired signatures are not identical (see Livschitz, col. 6 line 34). Further, Examiner submits that the combination Livschitz and Gilfix teach the claimed first and second hash techniques as claimed. Thereby, arguments are rendered moot in view of the new ground of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 7,249,255 issued to Anand. The subject matter disclosed therein pertains to the pending claims (i.e. using first and second hash algorithms).

U.S. Patent 6,286,032 issued to Oberlander et al. The subject matter disclosed therein pertains to the pending claims (i.e. hash values used in synchronization).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT TIMBLIN whose telephone number is (571)272-5627. The examiner can normally be reached on M-Th 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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